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AUTHOR Tremblay, Diane-Gabrielle; Le Bot, Irene
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ABSTRACT

The evolution of Germany's dual apprenticeship system and the challenges now facing it were reviewed. The following topics were considered: (1) the progression from craft guilds to vocational training; (2) the history of Germany's dual apprenticeship system from its organization in the 1970s; (4) apprenticeship in the dual system; (3) Germany's education system; (5) regulation of vocational training; (6) financing and the cost of training; (7) adjusting skills to new requirements; (8) regulation of the apprenticeship placement system; (9) continuing vocational training in Germany; (10) new challenges for today's dual system; (11) apprenticeship in Germany's Eastern Lander; (12) apprenticeship as a strategy for fighting youth unemployment; (13) Quebec's apprenticeship system; (14) an overview of apprenticeship in Canada; and (15) a comparison of the German model of apprenticeship to models in other countries. The success of Germany's dual apprenticeship system was attributed to the fact that it does not compete against itself by attempting to solve the problems of adjusting to changes in

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the labor market by creating branches that are parallel to system's existing branches and thereby undermining the value of the existing system or creating "upward competition through higher-level training programs." (Contains 12 tables/graphs, 33 endnotes, and 36 references.) (MN)

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Labour Education and Training Research Network

York University

Centre for Research on Work and Society

Suite 276, York Lanes Bldg
York University
4700 Keele Street
North York, Ontario
M3J 1P3
Canada

Tel: (416) 736-5612
Fax: (416) 736-5916

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The German Dual Apprenticeship System: An analysis of its evolution and present challenges

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by

Diane-Gabrielle Tremblay
Irène Le Bot
Université du Québec

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The German Dual Apprenticeship system
Analysis of its evolution and present challenges

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The German Dual Apprenticeship system
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1. Origin of the Dual System of Vocational Training

1.1. From craft guild to vocational training

Vocational training in Germany is derived from a tradition that dates back to the Middles Ages, when young people were already being trained in craft, commercial and technical occupations. From the 18th to the 19th century, despite the increasing pace of industrialization, the overwhelming majority of the German population continued to work in the primary sector (agriculture) and apprenticeship training was still marginal. Only the craft trades were officially regulated with specified training contents.

The situation evolved rapidly in the early 20th century and the premises for the current dual system of vocational training began to emerge but without any real legal framework. At the end of the Second World War, two principles that had proved valuable in general education were extended to vocational education and training:[1]

- the *Länder (states)* were given responsibility for education policy, independent of the centralised power of the federal government;
- a pluralist governmental and legal system guaranteed non-government forces a strong influence in important areas of education policy.

In the 1960s, which were marked by the drive to achieve equal opportunities, concerns focused essentially on the structural and quantitative aspects of education policy. In spite of all the reservations and criticism expressed about the modernity of the dual system of vocational training in the Federal Republic of Germany, it was ultimately preserved and became more firmly established through the Vocational Training Act of 1969 (BbiG). The issue that predominated the debates at the time was how to improve the quality of vocational training and overcome some of the narrowness of vocational training perceived solely as a preparation for a specific activity or occupation. From the early 1970s onwards, concerns focused primarily on the system's qualitative aspects. Technological changes and the process of democratization of German society increasingly called for a debate on the reform of the structures and contents of training. In this respect, the Vocational Training Act introduced a new situation from the outset by establishing the formal obligation for every vocational training program to provide "broadly conceived basic vocational training" (Para. 1) leading to several related occupations.

1.2. The Vocational Training Act

The Vocational Training Act, adopted in 1969, governs the whole range of apprenticeship training programs, in other words, training occupations in industry, the craft trades, commerce, administration, agriculture, and home economics. The public service,

however, is excluded. The wide spectrum covered by this act is a unique feature of the German vocational training system. In most other European countries where apprenticeships are institutionalized, they are restricted to only a few areas of training or the economy. The Vocational Training Act in Germany laid the legal basis for extensive rationalization of trades.

Although the Vocational Training Act was supported by a broad political majority and was the result of intense negotiations between the social partners, namely employers, trade unions and the state, it nevertheless represented a compromise for unions as well as for employers. The unions continued to press for comprehensive legislation incorporating arrangements for the financing of vocational training and involving firms that were not providing training in the costs of training (levy financing). However, firms would rather have training that corresponds to their specialized and immediate needs.

2. Historical Background

2.1. The 1970s: organization of the dual system

In the 1970s, amendments were made to the Vocational Training Act in order to improve the quality of vocational training. The reform took place under unfavourable economic circumstances, characterized by a high rate of youth unemployment and a serious shortage of apprenticeship places. The main aim of the reform was to reduce the number of qualifying training programs, which had decreased from 900 in 1945 to 627 in 1970. By the mid-1990s, there were only 370 training occupations left.[2] This involved eliminating the outdated occupations and combining and restructuring some of the existing training programs with similar contents. This reduction required that initial vocational training be broadened, which was severely criticized by employers. The latter argued that this provision did not leave any scope for practical training and that the overly general definition of some occupational fields did not allow for the necessary specialization. In response to these criticisms, branches of specialization were created in several occupational fields. For example, the new legislation reduced the number of recognized skilled occupations in the metalworking industry from 42 to 6 but provided for 17 options of specialization.

Moreover, throughout the 1970s, debates on the funding of vocational training and attempts to reform the Vocational Training Act suffered several setbacks. The employers' umbrella associations preferred to keep the existing 1969 Act but refused to include any sort of funding regulation which they saw as a threat to their managerial autonomy.

2.2. The 1980s: impact of the recession

In December 1981, the Bundestag (Federal Parliament) approved the "Vocational Training Promotion Act" (BerBiFG), guaranteeing the continued application of the 1969 Vocational Training Act. This new law gave a legal basis to the Federal Institute for Vocational Training (BIBB), which was set up in 1969, and defined its role in the

planning of vocational training and the collection of training statistics. However, this law still did not contain any funding provisions for vocational training. The 1980s saw a major expansion in the sector of continuing vocational training, due mainly to economic and technical progress and the subsequent needs for higher and different qualifications in the labour maket. The growth of new information and communication technology (NICT) called for major adjustments and continuing vocational training seemed to be able to respond more quickly to this change than did initial vocational training. It was then decided to radically modernize initial vocational training. In 1983, the Federal Government launched a series of pilot projects on "new technologies in vocational training" with the aim of integrating them fully into initial and continuing vocational training. The aim was to modernize the initial and continuing training programs for vocational school teachers and on-the-job trainers, to equip vocational schools and training centres with appropriate computerized equipment, and to modify training regulations for on-the-job training, especially for commercial and technical occupations.

2.3. The Federal Institute for Vocational Training (BIBB): a principal actor

The Federal Institute for Vocational Training (BIBB) is responsible for research and development in workplace vocational training. It also plays the role of service provider and advisor to the Federal Government and vocational training practitioners. The BIBB's tasks are to develop the bases for initial and continuing vocational training of skilled workers, qualified employees, journeymen and master craftmen in industry and commerce, the crafts, agriculture, the liberal occupations and public administration. The BIBB also has the mandate to modernize and improve vocational training on the basis of technical, economic and social developments. As will be seen further on, in this respect the BIBB plays a decisive role in negotiations leading the partners to define or review the training referentials. The BIBB is accountable to the Federal Government and comes under the legal supervision of the Ministry of Education and Science (BMBW).

3. Organization of the Education System in Germany

3.1. Structure of the education system

A brief examination of Germany's relatively complex structure of the education system in Germany is necessary in order to understand the dual system of vocational training (Table 1). German children start kindergarten at three years old, although this is optional until they start primary school at the age of 6. Primary school (*Grundschulen*) is compulsory and lasts four years, during which children are taught basic knowledge to prepare them for post-primary education. At the end of primary school, all pupils start Secondary Level I with a two-year orientation stage. The aim of this stage is to help pupils decide how to pursue their studies. Students at this level choose between the three different types of high schools available, which can last from 3 (end of compulsory attendance) to 7 years (end of Secondary Level II). Thus, at this point, which many consider to be too early, students must choose a path which is almost impossible to change later. This is one of the major criticisms of the German dual system.

8

Secondary education is divided into three branches. These three branches are clearly classified on the basis of the prospects they offer for higher education and occupational career. Some pupils opt for an end-of-compulsory education school (*Hauptchulen*) which ends at the end of Secondary Level I at the age of 16. If students decide to continue studying beyond the end of Secondary Level I, they can choose between different vocational schools or the dual system.

The second group of high school students attend a lower or intermediate secondary school (*Realschulen or Mittelschulen*). This alternative educational path offers a range of options with regard to further education but these are all at a lower level than university. Six years of study in a *Realschule* and success in the final examination lead to the intermediate education certificate (*Mittlere Reife)*. This certificate gives access to numerous administrative occupations, a traditional sector for children of the middle class.[3] Holders of this certificate can also pursue their studies in a higher technical school (*Fachoberschulen*) which can then give them access to specialized colleges with university status or integrated universities (*Fachochschulen*[4]*)*. These institutions offer training that is less academic and more oriented toward an occupation than traditional universities, for example in fields such as civil engineering or social work.

The third group of high school students continue their studies in a general-education school (*Gymnasien*), which is the most direct path to university and lasts eight to nine years (Secondary Levels I and II). The university entrance certificate (*Abitur*) marks its successful completion.

The possibilities of making the transition from the different schools to the *Gymnasium* (general-education school) are limited. Although it is possible to make the transition from the *Realschulen* to the *Gymnasium*, it is still quite infrequent, and it is extremely rare in the case of the *Hauptschulen,* which is the least prestigious branch. The latter offers the least demanding program and has, over the years, become the branch for children who fail academically and children of immigrants (D'Alba, Handl, Müller,1999).

In contrast, the dual system is more open. Nowadays, students can undertake apprenticeship regardless of the secondary education branch chosen. Whereas in the past, students came mainly from the *Hauptschule*, today they come from different branches. Of course, the more prestigious the branch, the better the chances of obtaining apprenticeship training in occupations that offer a high income, job security and social prestige.

Among the criticisms that are sometimes made of the German dual system is that the training sectors are too traditional. More recently, it has also been criticized for gender segregation within these training programs.[5] This issue will be examined in the following pages.

Table 1: Structure of the Education System in the Federal Republic of Germany

<table>
<tr><td colspan="8">Further education</td></tr>
<tr><td rowspan="2">Continuing workplace training</td><td rowspan="2">Evening schools

Adult Education Centres</td><td rowspan="2">Continuing vocational schools (Fachschulen)</td><td colspan="3"></td><td colspan="2">University (Universitäten)
Theological Institutes
Teachers' training Colleges
Academy of Fine Arts
Integrated universities</td></tr>
<tr><td rowspan="2">Medical profession schools (Schulen des Geundheitswesens)</td><td colspan="2" rowspan="2">Fachhochschulen
Integrated universities
Administration Fachhoschulen</td></tr>
<tr><td rowspan="2">Interim employment</td><td rowspan="3">Full-time specialised vocational schools (Berufsaufbauschulen)</td><td rowspan="3">Full-time vocational schools (Berufsfachschulen)</td><td rowspan="2">Higher Technical. schools (Fachoberschulen)</td><td rowspan="2">Single option technical school</td><td>Grammar school (Gymnasium) grades 11 to 12/13</td></tr>
<tr><td>Secondary Level II (2 - 3 years)</td></tr>
<tr><td>Dual system (on-the-job training and vocational school)
Basic training year

(3 years)</td><td colspan="2">General Education school (4 years) (Realschulen, Mittelschulen)</td><td>Grammar school Grades 5 to 10 (4 years) (Gymnasium)</td></tr>
<tr><td colspan="4">Lower secondary school (end compulsory education)
(Hauptschulen)
(3 years)</td><td colspan="3"></td></tr>
<tr><td colspan="8">Orientation stage (2 years)
Secondary Level I (10 to 15 or 16 years old)</td></tr>
<tr><td colspan="8">Primary schools (Grundschulen)
Primary level (6 to 10 years old)</td></tr>
<tr><td colspan="8">Kindergarten (Kindergärten)
Elementary level (3 to 6 years old)</td></tr>
</table>

3.2. Distribution of students

Today, approximately 1.6 million youths,[6] or an average of 2/3 of the 16-25 age group, still enter the vocational branch at the end Secondary Level I (*Realschule or Hauptschule).* In the 1980s, over 70% of this age group took part in the apprenticeship system.

The last two decades were characterized by major changes which have had a direct impact on the dual system. A combination of factors have helped transform and also maintain the popularity of the vocational training system. First, the increased educational level has altered the image of apprenticeship. Whereas in the 1960s the vast majority (80%) of apprentices came from the *Hauptschule*, nowadays they make up only 40%, and the majority come from higher level schools. A more recent phenomenon is that more and more young people are heading toward the dual system after having obtained their university entrance certificate. Given rising unemployment, many young people see this as a job guarantee and obtain an apprenticeship diploma even though they intend to go to university. Thus, the mean age of apprentices in the dual system increased from 16.6 in 1970 to 19 in 1996.[7] Fifteen-year-old apprentices make up less than 50% of the students. Training in the dual system is still highly regarded by the German population, which is why a growing number of holders of the university entrance certificate participate in this system.

For several years, the overall educational level of young Germans has been improving, even in the technical branches. Many apprentices are pursuing their schooling beyond the apprenticeship periods. Thus, in 1991, 22% of those who started university and 49% of those who had undertaken studies in a Fachhochschule (integrated university) had previously completed training in the dual system (BMBW 1992).

Another factor has contributed to the popularity of the apprenticeship system. Full-time vocational training schools (*Berufschulen)* have expanded in recent years due particularly to the shortage of apprenticeship places. These schools have helped channel the surplus of young people who want to undertake vocational training while waiting for apprenticeship places in the dual system to become available. Thus, a proportion of the students trained in full-time vocational training schools are heading toward the dual system, contributing to its growth. These schools offer full-time training programs that last from 1 to 3 years. The objectives of the *Berufschule* programs are threefold: to prepare young people to enter a higher level school, a *Fachoberschule* (higher technical education); to improve their chances of obtaining an apprenticeship place in the dual system and to provide a broad base of training in technology and commerce; and to facilitate the transition to employment.

The increase in participation in education and vocational training resulted in a major improvement in the qualifications and skills of the general working population. Over the last fifteen years, the general level of vocational qualification of the working population has increased from 65% to 80%. This percentage is expected to reach 90% by 2010 (Schmidt and Alex).

It is particularly interesting to note that the dual system has maintained its popularity despite facing numerous criticisms since its inception. This is due to the fact that, facing a growing population of young people, the dual system of training chose to gradually and steadily improve the training branches rather than create new ones as was the case in other European countries, for example, in France. Thus, young people who did not

engage in higher education had no other choice but to undertake industrial or tertiary training in the dual system.[8]

The higher educational level of many apprentices in the dual system has had major effects on their distribution in the training sectors. Table 1 shows that 28% of those who come from secondary schools without a diploma are mostly concentrated in the domestic services sector. However, they represent only 3.1% of apprenticeship contracts. Secondary school graduates are mostly found in the handicraft or agricultural sectors. A great number of them are also found in the domestic services sector (39.4%). A high proportion of apprentices who graduate from intermediate schools are found in the service sector and in the liberal occupations and are evenly distributed in industry and commerce, the handicrafts and agriculture. In 1996, the majority of training contracts (36%) were concluded for the category of apprentices who graduated from an intermediate or equivalent school.

In 1996, 15% of all apprentices had a university entrance certificate and most of these chose more technical or commercial occupations. Thus, two-thirds of those who undertook training as a bank employee had a university entrance certificate, while two-thirds of those who undertook training in hairdressing or sales had a secondary-level certificate only.

Table 2: Educational Level of Apprentices According to New Contracts Signed by Industry Sector in 1996
(as a percentage)

	Educational Level				
Industry Sector	Secondary Level I without diploma	Secondary Level I with diploma	Intermediate School with diploma or equivalent	Higher level with diploma	Other
Industry and commerce	1.5	24.8	36.3	23.0	14.4
Crafts	5.3	47.1	31.3	5.3	11.1
Agriculture	6.3	35.1	30.5	13.9	14.2
Public service	0.1	5.9	59.6	28.0	6.4
Liberal occupations	0.5	23.5	51.6	19.2	5.3
Home economics	28.0	39.4	6.9	0.9	24.8
Marine navigation	2.1	16.8	40.2	39.0	2.1
Total	3.1	33.0	36.0	15.6	12.1

Source: Bmb+f (1998 : 53)

Thus, within the dual system, access to apprenticeship places is differentiated based on the different levels of schooling and type of diploma. In this respect, the dual system fulfills a dual function in regulating the labour market. On the one hand, it offers youths without a diploma the opportunity to enter the labour market in sectors without high occupational qualifications (representing 55,000 youths today) (Bosch 1999). On the other hand, it allows young apprentices who hold a diploma to work in highly specialized sectors.

3.3. Distribution according to gender: the equal opportunity challenge

Since the early 1980s, many studies have examined the distribution of boys and girls in the vocational training branches. Out of two thirds of the age cohort covered by vocational training in 1997, 58% were boys and 42% were girls, compared to 75% and 25% respectively in 1950 (Schmidt and Alex). There have been marked improvements, particularly in female "general" education and especially at the intermediate levels. In 1995, over half of the students who graduated from the *Realschulen* were girls and they represented 52.3% of graduates from general-education schools.[9] This is remarkable since in 1995, women made up only 38.8% of university graduates versus 61.2% for men.

While the situation has improved in terms of the percentage of women apprentices, occupational segregation is still striking in certain sectors of the vocational training system, as shown in Table 3. Thus, in 1996 the majority of graduates in the liberal occupation fields were women. Women made up 93.9% of medical or notary assistants compared with 6.1% for men. In contrast, women made up 21.5% of crafts graduates compared with 78.5% for men.

Table 3: Number of Women by Training Sector in 1996
(in '000s)

Industry sector	**Total trainees**	**Number of women**
Industry and commerce	707.3	307.4
Crafts	627.8	121.1
Agriculture	33.9	10.8
Public service	49.4	29.2
Liberal occupations	160.6	152.6
Home economics	12.9	12.3
Marine navigation	0.3	0.02
Total	**1592.2**	**633.5**

Bmb+f, (1997/1998. :58-59). Basic and structural data

There are still fewer women in the dual apprenticeship system and the gap in non-traditional occupations is still very wide. A comparison of the 15 most popular occupations for young women and young men in 1996 shows that their occupational choices were totally different, as can be seen in Table 4.

Table 4: Trainees in the 15 recognized skilled occupations in 1996, by sex
(as a percentage)

MEN		WOMEN	
Training occupations	%	***Training occupations***	%
Mechanic, repairer	7.9	Office clerk	8.1
Electrician	5.7	Doctor's assistant	8.0
Mason	5.2	Dentist's assistant	6.7
Joiner	4.1	Retail trade clerk	6.5
Painter & decorator	4.1	Hairdresser	5.8
Plumber, gas installer	4.0	Clerk, commerce and industry	4.9
Clerk, wholesale trade	3.0	Bank clerk	4.1
Furnace builder	2.9	Saleswoman, foodstuffs	4.1
Clerk, retail trade	2.8	Hotel clerk	3.3
Bank clerk	2.4	Consulting assistant, taxation	3.1
Metal millworker	2.4	Clerk, wholesale	3.0
Operations technology mechanic	2.3	Clerk, public administration	2.9
Agent, commerce industry	2.3	Lawyer's assistant	2.5
Industrial mechanic	2.1	Salesperson	2.4
Carpenter	2.0	Lawyer's assistant & notary clerk	1.7

Bmb+f (1997/1998): 29, Numerical barometer

Although in recent years, young women's demand for apprenticeship places has increased markedly, they are still underrepresented in the dual system (43%) and concentrated in a small number of specialized occupations that offer fewer prospects for promotion than those in which young men are concentrated. However, young women are overrepresented (65% of students) in full-time schools (*Beruffachschulen or Fachschulen*), which are often private and fee-paying and whose training and diplomas are not recognized by firms. Since these diplomas are not taken into account in industry-wide agreements, the salaries earned are always lower than those paid not only to male graduates from the dual system but also to female graduates from this system with comparable occupations and qualifications (Marry 1995).

4. Organization of Apprenticeship in the Dual System

4.1. Foundation of the dual system of vocational training

The vocational training system in the Federal Republic of Germany is the result of collaboration between the public and private sectors and refers to any public and private institutions or activities that directly or indirectly serve to provide occupational qualifications. Vocational training is based on institutional procedures and tripartite negotiation[10] that includes three major actors: public authorities, employers'

organizations and trade unions. With regard to funding, the costs of school-based training are assumed by the state and the costs of practical training are assumed by firms that provide the apprenticeship places and take in trainees. Lastly, the "dual system" of vocational training in Germany is based on three main principles: duality, the primacy of crafts, and consensus. These will be examined below.

4.2.The principle of duality

Alternation between training in vocational schools and training in firms provides the fundamental structure of the vocational training system. While in-firm training is regulated nationally, the vocational school instruction programs are the responsibility of the Länder (states). This situation required the establishment of mechanisms to harmonize programs and negotiate with partners. In fact, the 1969 Vocational Training Act only regulated in-firm training. Under an agreement concluded in 1972 and consolidated in 1979, coordination was established between the federal government (in charge of in-firm training) and the ministries of Education and Cultural Affairs (responsible for school-based instruction). The agreement provided for negotiating mechanisms to facilitate a subsequent agreement, under which the competent federal ministry can only pass a decree on training once they have obtained an agreement between the social partners and consulted the experts (from industry, associations, the school system etc.) in order to draft training regulations (OECD 1994: 21. Interview with Richard Koch, BIBB).

Workplace training is based on a contract signed by an apprentice and an employer. Each contracting party undertakes to provide or acquire the knowledge and skills required for the qualification concerned. The latter is defined in a referential which is established and recognized at the national level. Most apprentices in the dual system spend two weekdays in public vocational schools where they are taught general subjects (language, economics, mathematics etc) and receive theoretical grounding in the chosen occupation. The rest of the week (three days) is spent in the workplace. However, more and more firms prefer that apprentices spend entire weeks or months in the school system, followed by periods in the workplace, in order to minimize disruption of the production process (our interviews, Krupp).

In general, young apprentices undertaking their training in small- and medium-sized businesses learn their trade by directly participating in the firm's production system. On the other hand, those who undergo their apprenticeship in a large firm are trained in the firm's vocational training centre. However, in recent years, joint training centres for both small- and medium-sized firms have been created.

4.3. The principle of primacy of occupation

Training under the dual system does not focus on the specific needs of the training firms but is meant to provide the skills needed to perform a craft or occupation. According to the Act, vocational training must focus on "broad basic vocational knowledge and the knowledge and technical skills required to perform an occupational activity." Training referentials are developed on this basis with the participation of social partners (employer

and union federations). The referentials are then adopted by the competent federal minister on the basis of the consensus obtained. The BIBB, which includes a great number of researchers and experts on training, contributes to developing the training referentials through its research studies and also by leading and arbitrating the negotiating process.

Workplace apprenticeship is the fundamental principle of vocational training in Germany and is thought to combine the most favourable conditions for developing skills. Skills include the capacity to take on the responsibilities involved in completing tasks, the ability to communicate and work in a team, the ability to think in terms of systems, and the ability of learning to learn. These skills are combined with theoretical knowledge and occupation-related skills. Because it is considered vital to skill development that training be sufficiently long, training under the dual system lasts three years.

4.4. The principle of consensus

As was seen above, the dual system is based on the close cooperation between the school system and firms. Because the equilibrium of the system depends on the supply of training places by firms, they play a prominent role. Beyond social and moral reasons, firms have no obligation to participate in the system and provide apprenticeship places. However, when firms agree to provide training places, they must comply with the various laws and regulations governing vocational training procedures. As will be seen, these regulations are particularly important for the development of vocational training standards as well as the implementation and control of training.

The establishment of new referentials or the review of an existing one can be initiated by the unions, employers' associations or the Federal Institute for Vocational Training (BIBB). First, the partners negotiate the basic standards, such as the designation, duration of training, job description and training program. Once the partners have come to an agreement, the BIBB then has the delicate task of proposing a project which not only takes into account the linkage between the responsibility of the federal government and that of the Länder, but also respects the viewpoint of the other partners.

The Länder develop a preliminary curriculum for the vocational training schools and the BIBB, for its part, develops the contents of workplace training with experts from employer associations and unions in the sector involved. Only once all the partners have arrived at a consensus can the government ratify the new program.

5. Regulation of Vocational Training

Pursuant to the Vocational Training Act, young people under 18 can only undertake apprenticeship in one of the 356 occupations that are currently recognized and regulated. The development of the regulation of in-firm apprenticeship and its coordination with the school curriculum are the result of a long and complex process (Bosch 1999). Apprenticeship trades are subject to national regulations. The Federal State and Länder

thus conduct a consultation process to regulate this mechanism and rely on agreements negotiated among social partners under a "corporatist" type of arrangement (Richard Koch).

The originality of the dual system lies in its organization. Vocational training is organized along the line of a "neocorporatist" type of regulation that is based on the combined action of employers, unions and chambers of commerce and industry, to whom the state has given the mandate to manage this collective good. According to Möbus and Verdier (1999), this mandate is based on the characteristics of a "private" training supply where producers and users are merged because they are firms. This type of neocorporatism represents a subtle compromise between management by the state and management by the market. Within this same process, partners in each industry sector attempt to define the contents of workplace training and the type of qualification produced, while acting within the framework of federal legislation and a market-regulated supply of apprenticeship places.

5.1. Establishment of referentials for workplace training

As has been noted, vocational training in the dual system is based on the concept of skilled occupation (*Ausbildungsberuf)* which refers to curricula whose contents are regulated by decree. The skilled occupations are defined as "a whole range of occupational qualifications that are negotiated and generally recognized by society." (translation) Thus, the training in any of these 356 skilled occupations is meant to provide the opportunity for trainees to acquire the vocational qualifications required to perform a diversity of occupational activities as a skilled worker or employee (Koch).

Although in-firm vocational training is regulated at the national level, the instruction programs delivered by vocational schools are the responsibility of the Länder. Training programs are first developed through a consensus between the social partners, employers and unions, who must arrive at a preliminary agreement before presenting an application for the creation or reform of training. On the basis of this application, the Federal Institute for Vocational Training (BIBB) works with the partners concerned to develop the in-firm training project. However, the BIBB's recommendations can be challenged by the social partners if they are considered to be too remote from the realities of in-firm training. At the same time, a Ministry of Education (KMK) commission will develop the core curriculum. These two referentials are then harmonized during a plenary session that includes both commissions. Examinations are also set by the referentials. Based on the consensus obtained, the in-firm training referential is thus adopted by decree by the federal ministry and the Standing Conference of the Ministers of Culture (of the Länder) issue the core curriculum.[11]

The referentials, which refer to the skills and knowledge which must be taught, are minimum standards (training profile). They are implemented as an analytical and chronological program (master training plan). According to the managers of large firms whom we interviewed, the training that they provide goes well beyond these minimum standards which would not provide trainees with sufficient skills.

So as to take into account the different levels of technological change among firms and avoid having referentials becoming outdated too rapidly, since the 1980s referentials no longer include references to processes or equipment but refer rather to tasks or functions (Koch).

Each Land is responsible for establishing its instruction program based on the core curriculum adopted by the Ministry of Education (KMK). The BIBB recommends that "the creation of a training specialization respond to a sufficient and lasting requirement which is not specific to a firm and allows for the independent execution of the broadest possible skilled activity." In this sense, the training referentials are minimum standards imposed on all firms. As the German training system is based on differentiation between the needs of a given firm and the requirements for a given occupation, it is not surprising to find this issue at the centre of political debates over the creation or reform of existing referentials. Even if the partners reach an agreement, the discussions on the contents of vocational training express the interests of the social partners. Thus, while trade unions prefer to have the broadest possible training to foster the trainee's occupational autonomy, employers advocate a narrower and directly operational training. For this reason, the review of metalworking trades took ten years. This process was criticized for having taken too long and, as a result, today's reforms are more rapid.

5.2. Implementation and supervision of vocational training

The regional Chambers of Commerce and Industry, which represent a group of firms in the same industry sector, are responsible for supervising the vocational training process and validating the examinations. An equal number of employers and employees are represented on the vocational training committees set up by the Chambers. These committees are responsible for assessing a firm's ability to provide training, that is, whether or not it has the required equipment and trainers. The advisors appointed by the Chamber must ensure that firms comply with the training regulations. In the event that a firm does not carry out the training according to the core curriculum prescribed in the referentiel, it is the advisor's task to request that the firm correct the situation. In an extreme case where the problem persists, the Chamber would be obliged to cancel the existing contracts and stop the firm from signing new apprenticeship contracts.

Similarly, the examination boards include an equal number of representatives of employers, employees and master craftmen. Every year, the trade unions delegate over 100,000 members to these boards to guide and supervise the conduct of national examinations all over Germany.

5.3. Assessment and certification system

The assessment of trainees in the dual system is based on three types of certification: a certificate issued at the end of the training period upon successful completion of a national final examination, which all trainees must take, regardless of industry sector; a certificate issued by the firm's trainer; and an assessment by the vocational training

school. The combination of these three external and internal assessments helps ensure that standards of competency are maintained and not left solely under the control of the firm where the training takes place. These three certificates make up a "certification system" whose components are independent and complementary but not coordinated.[12] Each assessment has its own objectives, all of which form a whole in the acquisition of knowledge and skills.

The certificate issued following the standardized national examination is a combination of a written and an oral test and also serves to ensure that the national objectives of vocational training are achieved. The impact of a triple certification system on the labour market seems to be quite complex. For example, some employers recognize the national certification while others ask for the in-firm training certificate as a prerequisite. Thus, the certificates issued following an apprenticeship do not automatically grant workers or employees a position or a status on the labour market but rather provide a recognition of their qualification.

The main characteristics of the assessment and certification system (Reiss) are based on a comprehensive approach to training, standardization, transparency, validity and its wide acceptance in the economic sphere. According to the experts and actors we interviewed, this "certification system" has great advantages. Highly standardized training helps maintain high levels of qualification on the labour market. Employers have sufficient information when recruiting staff and standardized qualification constitutes a basis for negotiating wages. Trainees remain highly motivated owing to the advantages provided by the certificates and the system helps support the implementation of new training regulations and contents.

Although the system of triple certification has numerous advantages, it also has problems which are not easily solved. The balance between the certificates and their method of assessment is often debated. The Länder, which are in charge of the education system prefer a more internal (school-based) rather than external (firm-based) assessment. Conversely, some firms want to play a more important role in skills assessment. However, it is obvious that an assessment which is exclusively based on the in-firm training certificate would have negative effects on apprenticeship and training since it would be based on the principle of minimum required standards. The more advanced and less task-specific skills would not necessarily be included in this assessment.

6. Financing and Cost of Training

6.1. Financing of vocational training

The question of financing vocational training is still an issue in Germany. The foundations of vocational training in firms were established for the first time by the Vocational Training Act (1969). Although this Act included numerous articles on the necessity to provide long-term, high-quality training, it made no provisions for the financing that would allow this objective to be achieved. In fact, the parties in power in Germany as well as the social partners have never been able to reach a consensus on this

question. As was seen above, part of the system is currently funded by employers who provide in-firm trainir, without any financial obligation for firms which do not offer apprenticeship places.

In early 1969, it was recommended that a financing structure be set up independently of the education system to fund vocational training. The government decided to establish a committee of experts responsible for evaluating the costs and financing of vocational training and for making proposals for a financing regulation. The committee concluded that all private and public firms should participate in financing vocational training. The fund created would allow for the burden of training to be shared among training and non-training firms (Folkmar, 1997: 45). However, the discussions mainly revolved around the "how" (financing procedures) rather than the "why" (to ensure a sufficient number of quality apprenticeship places). Paradoxically, it was not clear who supported or was against a long-standing financial contribution. Thus, SMBs in various industry sectors and associations of young entrepreneurs were among the supporters of this financing system while major employer confederations—mainly made up of large firms which actually fund apprenticeship training—were among the opponents.

In 1980, with the adoption of the Decree on the Promotion of Apprenticeship Places, the purpose of which was to provide sufficient training places in a context of shortage, public debate was reduced to a purely quantitative aspect. It was suggested that the state should only be seen to be taking action in an emergency, in particular when the supply of training places did not satisfy the demand. In the latter half of the 1980s, when the ratio of supply and demand favoured the demand side owing to a surplus of training places, debates on financing were for all practical purposes forgotten.

In the 1990s, the new shortage of apprenticeship places in relation to demand put the question of financing back on the agenda. A recent survey showed that over one third of firms (more than half in the new Länder from former East Germany) were in favour of a contribution from non-training firms. Some suggested a system in which half of the fund would come from the Chambers of Commerce and Industry (from members' dues, i.e., firms) and the other half from the Land. The discussions also dealt with state subsidies to finance apprenticeship, particularly in the new Länder, as shall be seen below.

6.2. The costs of vocational training

Vocational training costs are still a major issue in the negotiations between the partners, in particular for firms. Costs vary significantly from firm to firm. In particular, they vary according to industry sector and trainees' wages which are negotiated within the collective agreements. In general, they represent 49% of a firm's gross training expenditures. Training costs also vary according to whether the training takes place on site, as is the case with most of the small- and medium-sized businesses, or in the training workshop of a large enterprise. Costs related to full-time or part-time training staff can represent up to 39% of total training costs. To this should be added the costs of managing, examinations and the material required for the apprenticeship (12% of total cost).

A 1992 BIBB study showed that the average training cost per year and per firm is estimated to be 30,000 Deutsche marks or approximately $20,000 (Canadian dollars) and can vary between DEM5000 and DEM50,000 ($3600 to $36,000) depending on the occupation and firm size. In many firms, particularly in small firms, the trainee's participation in production contributes to covering part of the training costs. The rate of "return" on investment obviously varies according to the trainee's wages and experience and also according to the degree of simplicity or complexity of the tasks to be performed and, thus, according to the time needed for the trainee to become productive. Many small firms invest in a countercyclical fashion by hiring more trainees when unemployment rises. Studies on vocational training costs show that the net costs of apprenticeship are much lower in small firms.[13]

Table 5: Total Training Expenditures, Net Cost and Return on Investment
(per year and per trainee)

	1971	1980	1991
Total expenditures	DM6,948	DM17,043	DM29,573
Net cost	DM4,387	DM10,289	DM17,862
Return on investment	DM2,561	DM6,753	DM11,711

Source: Kau, (1999: 37) quoted in *The Dual System of Vocational Training in Germany*, Gerhard Bosch (2000)

A comparison of the net training costs of a firm which invests in training and one which does not, shows that, in most cases, it costs more to recruit and hire skilled staff on the labour market than to engage in internal training. Firms acknowledge that they derive some benefits from in-firm training even though these benefits are both rarely quantified and difficult to quantify. Thus, firms save the costs of recruiting staff, reduce the risks of making a bad choice and save on socialization costs. It is thus not surprising that many firms see training as advantageous and that, on the whole, they train more young people than they need, often many more than their trainee quota, which corresponds to the ratio of trainees to the firm's total number of employees.

6.3. Trainees' wages

Wages paid to trainees are negotiated, as was mentioned above, between employers and unions in each industry sector. In 1998, trainees received an average allowance of DEM1067 ($768) in West Germany and DEM951 ($684) in East Germany (Bosch 1999), or less than a third of the average wages of a skilled employee. There is clearly a wide disparity in trainees' allowances according to industry sector and occupation. The current amount reflects the supply and demand of young trainees in each industry sector. Thus, the rate is DEM700 ($504) for a barber or hairdresser, DEM1800 ($1296) for a mason and DEM1446 ($1041) for a road construction worker. The highest allowances are meant to reinforce the value of occupations that are poorly regarded by trainees. Allowances

paid to trainee bank employees are much lower due to the popularity and career prospects offered by this training. According to David Marsden,[14] the originality of the German system lies in the low remuneration of trainees. This practice facilitates the hiring of trainees because it reduces the net cost of employing these youths. In fact, this cost includes the direct training costs, plus the wages of trainees, minus the value of the trainees' work. Trainees' wages are adjusted according to apprenticeship year. Recently, trainees have joined forces to demand an increase in their allowances.

7. Adjusting Skills to New Requirements

7.1. Training referential reform program

When in 1970 new technologies began to be introduced, many of the training decrees, which had been created as far back as 1930, became obsolete. In Germany, the response to the new production requirements has until now been integrated into the existing system by transforming the training referentials. These adjustments, which could be called "organic," help maintain the coherence of the system and the quality of economic and social coordination (Möbus, Verdier 1997).[15] The reform of the referentials, which has affected most of the vocational training occupations, starting in 1987 with those in the metalworking industry, has been carried out according to four guiding principles.

First, the merging and combining of closely-related occupations reduced the number of occupations from 900 in 1945 to 356 in 1997. Second, several occupations were developed with a common basic training in the first year followed by specialization in the following years. Third, it was decided to include new technology apprenticeship in the occupations concerned. The fourth and last principle led to a change in apprenticeship methods resulting in greater flexibility, autonomy, and responsibility for trainees.

Until very recently, the process of reform of training contents was extremely slow, in particular in the metalworking industry. The regulation of training measures, which had to be achieved through consensus, led to a process in which widely differentiated interests clashed. The slow process was made even slower by the reservations often expressed by managerial representatives. In the latter's view, a reform necessarily implies additional investment to be granted by firms so that new training programs can be implemented.

As for employers, there were conflicts of interests between large and small firms, and between traditional firms and firms with renewed management and new technology. Divergent opinions about the levels of quality standards were also expressed. Within the unions, debates revolved around the issues of wage adjustment, work organization, and the training of teachers and trainees in the training schools.

In some cases, this process lasted as long as seven years. Therefore in 1995, the federal authorities and partners finally recommended a maximum period of two years to conclude a file. It was vitally important to adapt the occupational profiles to the rapid changes in the labour market. The speed of reform has considerably improved since then.

From 1996 to 1999, thirty one (31) new occupations were created and ninety seven (97) other occupations were modernized (BIBB 1999). The acceleration of procedures made it imperative that methods be developed to determine the required changes in qualification. The BIBB has had to set up a system of early diagnosis of skill evolution, the purpose of which is to analyze the job market, the innovation processes and their effects on jobs.

As in other countries, the German system has been faced with the problem of growing economic instability, which tends to undermine the institutional mechanisms characterized by durability rather than flexibility. The German system has not only had problems taking emerging occupations into account, but has also been slow in getting involved in the new tertiary sectors, which have nevertheless become more and more important in all the Western economies. The growth of the service sector, globalization and internationalization of trade relations, organizational changes related to the diffusion of new information and communication technologies, the integration of tasks which used to be separated, and the disappearance of reporting levels are all pressures which come into play in the creation and reform of training referentials.

Innovative concepts, in particular action-focused skills, have already been applied during the reform of training referentials or the creation of new referentials. Nowadays, vocational training, like occupations, is oriented towards action so as to teach trainees the ability to plan, execute and assess their work independently.

7.2. Creation of new fields of apprenticeship

The creation of new occupations in a context of structural change is quite complex and must meet certain conditions. First, there must be a critical mass of potential trainees and apprenticeship places because new profiles cannot be developed simply to respond to the needs of a few firms. Second, the new profile must correspond to a lasting need. Moreover, if the skills required change too rapidly, the training programs must be more flexible.

The new profiles cover a range of activities, including occupations in information and communication technologies. A first group includes occupations such as film and video editor, producer of audiovisual material, computer graphics designer, and so on. In 1998, there were 1822 trainees in computer graphics alone. The second group includes the commercial and technical activities related to information technologies and focused on the needs of suppliers and users, as shown in Table 6.

These four new occupations were developed by the partners in a record time of nine months. In 1997 and 1998, there were already 13 585 trainees in these sectors, half of whom held a university entrance certificate (*Abitur*). It should be noted that women made up only 13.9% of trainees in these sectors.

Table 6 : New Apprenticeship Profiles

Four new occupations	Selected fields of activity
Service suppliers	
Information technology electrician	Computer systems, radio networks, terminal and security systems
IT specialist	Expert in sales engineering, multimedia systems, computer centres, servers, etc.
IT technical support specialist	Industrial systems, technical, commercial and apprenticeship applications
Service users	
IT agent	Industry, commerce, bank, insurance, hospitals

Bosch (1999: 21).

8. Regulation of Apprenticeship Placement System

8.1. Training supply and demand

It should be recalled that the dual system does not oblige firms to provide training. Thus, several factors have an influence on the availability of training places. The country's economic situation can obviously have a significant impact on the ability of firms to support training. During the last recession, many firms, including large ones, radically cut back on training in order to reduce expenditures. For example, the quota of trainees (ratio of trainees to employees) in engineering dropped from 6.5 to 3.5%.[16] Furthermore, the geographical distribution of training firms can create wide regional disparities, particularly in former East Germany, where there is a serious shortage of medium-sized businesses. There are also great disparities between industry sectors.

In the context of economic globalization, the German training system has had to demonstrate its capacity to innovate and adapt to new challenges. From the 1970s onwards, due to rising youth unemployment, the demand for training in the dual system and for post-graduate degrees increased exponentially. Although the number of trainees stabilized around 1990, it increased again from 1992 onwards, in particular as a result of the incorporation of the Länder of former East Germany. Table 6 shows that the offer of in-firm contracts increased slightly in 1992 and stabilized from 1993 onwards, thus exacerbating the shortage of apprenticeship places and increasing the number of unplaced applicants. Moreover, there are still unfilled training places even though the number has gone down considerably over the last few years.

TABLE 7: Demand for and Supply of Apprenticeship Places (000s)

	Territory A				Territory C				
	1980	1985	1990	1991	1992	1993	1994	1995	1996
Total Apprentices	1715.5	1831.3	1476.9	1430.2	1666.6	1629.3	1579.9	1579.3	1579.2
New Contracts concluded	650.6	697.1	545.6	539.5	595.1	570.1	568.1	572.8	574.3
Unfilled apprenti-ceship places	44.6	22.0	113.9	128.5	126.6	85.7	54.2	44.2	34.9
Unplaced applicants	17.3	58.9	14.0	11.2	13.0	17.8	19.0	25.0	38.5

* Territory A: pre-1990 border of the FRG (11 Länder)- Territory C: post-1990 territory (16 Länder)

Source: Bmbf, Statistical Overview of Education and Research, numerical barometer (1997/1998: 30)

In general, unfilled places are due to a lack of geographical fit between supply and demand or the perception of trainees that these occupations are less attractive and less well-paid (Koch interview). Young people with poor academic results and those with a social handicap were the first to be affected by the tightening of the apprentice selection process (Koch). However, even though school certificates have an influence on the chances of obtaining an attractive occupation, firms continue to select apprentices on the "basis of a happy medium" in order to increase their probability of retaining young trainees in the firm that trained them. Thus, students with lower marks can nevertheless receive training.

8.2. Regulation measures

Politicians, employers' organizations and unions regularly join forces to attempt to correct this imbalance and increase the number of available training places. Although the supply stabilized in the 1990s, guaranteeing a sufficient supply of training places which are also adequate in terms of geographical location and specialization is still a major challenge.

While for most countries the shortage of well-trained technical staff has become a less important issue than unemployment (Koch 1998), this is less true in Germany where most young people trained in the dual system have obtained employment that matches their training. Thus, for many years, youth unemployment was relatively lower in Germany than in other industrialized countries. This situation is partly explained by Germany's particular regulation sytem. Even though employers make their own decisions about the supply of apprenticeship places without any legal obligation, as a group of they take on a

specific social responsibility to provide a sufficient number of in-firm training places. Compared to other countries, the high level of organization of German employers and their cooperation within the Chambers of Commerce and Industry make for a unique situation in terms of vocational qualification, which is regarded as a collective good. It should be added that the Chambers and employers' federations play an essential role in maintaining this balance by carrying out campaigns to encourage firms to provide more apprenticeship places.

However, the state has had to adopt measures to guarantee that youths can find an apprenticeship place and that there is an equitable distribution of places, taking account of disadvantaged youths in particular. Although the state has used these measures to reduce the shortage of apprenticeship places, it has not eliminated it completely.

Although the dual system is based on "the ability and willingness of a sufficient number of firms to train" (Koch), the growing number of firms that are giving up training youths are putting the dual system of training in jeopardy. To respond to the new skill requirements, Germany first used the flexibility of the continuing vocational training system to cover these new needs before integrating them into initial training. Furthermore, as Table 8 shows, continuing vocational training is becoming increasingly popular and widespread.

Table 8: Participation in Continuing Training Measures by Branch
(as a percentage of population aged 19 to 65)

	Territory A				Territory C	
Branch	1979	1982	1985	1988	1991	1994
Continuing vocational Training	10	12	12	18	21	24
General further training	16	21	18	22	22	26
Retraining	2	4	3	3	4	3
Total participation rate	**23**	**29**	**25**	**35**	**37**	**42**

* Territory A: Pre-1990 border of FRG (11 Länder) - Territory C: Post-1990 territory (16 Länder)

Source: Bmbf, Statistical overview of Education and Research, numerical barometer (1997/1998: 43)

Dual training programs that are focused on the long term and based on rigid vocational profiles (Kutscha) are increasingly being seen as too onerous and too rigid to meet the precise needs of firms. And because of the complex negotiating procedures, there are increasing demands that the state get more involved in regulation.

In a context of shortage of apprenticeship places, the state became more involved, implementing measures aimed essentially at limiting school-based training outside the dual system. The state's strategy to encourage training in firms was to increase joint training centres for firms which otherwise would not be able to provide comprehensive training. SMBs can also pay for apprenticeship places in the training centres of a number of large firms, for example, Krupp, which we visited.

Despite continuous demands from the unions, only a small number of economic sectors currently have rate agreements for training costs between training and non-training firms (Koch 1998). The possibility for some firms to take advantage of other firms' investments in training has not significantly reduced the propensity of firms to provide training themselves. However, the supply of apprenticeship places is obviously conditioned by cost/benefit considerations. As our interviews showed, some managers question the relevance of the system and would prefer to provide more specialized training that meets their needs only.

Paradoxically, in spite of debates about the costs generated by training in relation to its usefulness in the short and medium term, particularly in large firms, the latter continue to regard the training provided in their own environment as the most effective type of training to meet their needs for young workers. However, the more the arguments of short-term costs/benefits dominate the economy, the greater the risk of not being able to meet long-term needs for workers (Koch 1998). In fact, since 1990, firms have tended to offer training places according to their short- and medium-term needs. Koch maintains that it is owing to sectoral and occupational mobility that there has not yet been any serious friction on the labour market. Thus, most occupations in the apprenticeship system potentially give access to numerous jobs and, conversely, a great number of technical jobs are not just restricted to applicants who have had a specific training.

9. Continuing Vocational Training in Germany

9.1. Organization of continuing vocational training

Continuing vocational training in Germany as in many other countries, has expanded considerably in recent years, judging by the number of people who engage in it and the amount of money spent on it. Continuing vocational training has become a source of innovation and productivity for firms. Several factors account for the development and popularity of continuing training. Structural changes related to the labour force such as population ageing, the increasing number of women on the labour market, immigration from Eastern bloc countries, technological change, market globalization, and work reorganization, have created a demand for new skills. Moreover, the disastrous

consequences of the high unemployment rate and long-term unemployment have turned continuing training into an active measure of labour market integration and retention.

Within the framework of the European Union, the development of "a European competency" is an important path for continuing vocational training, in particular in learning foreign languages and knowledge about neighbouring countries. The reunification of Germany and the integration of the new Länder into the market economy are other factors that have contributed to this rapid expansion.

The demand for continuing training also increased as it became increasingly clear that initial vocational training alone could no longer guarantee job security, qualification renewal, and the development of new skills required by a continuously changing labour market. Initial vocational training has become a prerequisite for the success of continuing vocational training and in Germany these two systems are closely linked.

Continuing vocational training in Germany has developed in three main areas. First, continuing training is provided in firms for their own staff, and small- and medium-sized businesses may also request outside training for their employees. Second, continuing training is provided under the Decree on Work Promotion that allows the government to develop subsidized training courses. Third, the greatest share of demand for continuing training comes from individual applicants who pay for the training themselves or receive financial assistance from the state. Each of these areas has developed its own profile of supply and demand.

A characteristic of continuing vocational training in Germany is that its regulation is fragmented. Another characteristic of the continuing training market is that it is vague in terms of the validity of the training provided and the competency of trainers. To redress this situation, in 1996 employers and employees signed an agreement to develop better quality training. Another characteristic is the diversity of funding sources, which mainly come from firms, the federal government, public funds or individuals (see Table 8).

Table 9 : Total Continuing Training Expenditures by Funding Source in 1992/93 *(billion DEM)*

Firms/employers (excluding agriculture and self-employed workers)	24.7
Federal Institute of Labour	19.0
Public funds	4.5
Individual funding	9.8

Source: Continuing Vocational Training in Germany, BIBB, October 1997: 10.

9.2. Access to and Attendance of Continuing Vocational Training

Over the last ten years, continuing training, whether voluntary or imposed by firms, has gained in importance. In 1994,[17] some 19.9 million people, or 42% of all Germans aged 19 to 64, participated in continuing training. Nearly half of the people who engage in continuing training do so on their own initiative while the others do so at their firm's request. The Bibb studies shows that 27% of participants are between 19 and 34 years old. On the whole, the participation rate tends to decrease after the age of 40. The more educated people are, the more qualifications they have and the greater their interest in continuing training. Furthermore, there are significant differences according to people's position, job, job status and industry sector. Only 22% of blue-collar workers engage in continuing training, compared with 34% of self-employed workers, 38% of white-collar workers and 49% of public servants. The mass entry of women into the labour market in recent years has been accompanied by a steady increase in the proportion of women undertaking continuing training, which, in 1994, was 40% compared with 44% for men. These differences can be explained by type of job or occupational status, since in the case of full-time workers, the participation rate for men and women are not significantly different (35% men and 36% women).

Moreover, the rate of participation in continuing training clearly differs according to industry sector, the working conditions in firms and firm size. A survey conducted as part of the European program FORCE (1994) showed that the banking and insurance industry had the highest rate of participation in continuing training (50%), followed by the energy sector (47%), and the steel sector (33%). The real estate sector (17%) and the hotel and catering industry (14%) had the lowest rates.

9.3. Measures facilitating continuing vocational training

Employers and employees have a different view of the advantages and disadvantages of continuing vocational training.[18] Employers must reconcile the risk of providing training to their staff with the risk of staff leaving once they have been trained, and with the risk associated with lack of employee motivation and mobility if they do not provide training. Employees, on the other hand, complain that their occupational and personal activities do not leave them enough time to participate in training, and that there is little advice available on training (Alt et al. 1994).

Continuing training has become more accessible through collective agreements and legislation. Currently, more than 200 collective agreements contain provisions on continuing training. In general, these provisions stipulate that employers are obliged to release their staff for training courses (a minimum of 5 days per year) and to bear the equipment and travelling costs. In Germany, 10 of the 16 Länder have passed legislation on continuing vocational training.

Several measures and initiatives exist to provide access to training for people who do not have access to training through a firm. These measures are generally intended for

population groups who are disadvantaged in terms of employment, people with few skills, the unemployed or women returning to the labour market. A series of pilot projects were conducted in 1994 with the support of the Ministry of Education and Science to allow adults who had not completed their vocational training or who were faced with job loss to acquire skills. Similarly, the Federal Government and the Länder have developed training programs aimed at creating equal opportunities on the labour market. These programs promote women's access to non-traditional occupations and include measures to support single mothers or women returning to the labour market after a long period of absence.

9.4. The supply of training

As was seen above, one feature of the German system is the diversity of training suppliers. Because of the large number of suppliers, there is consequently a great variety of objectives, methods and training programs. However, firms and employers still make up the most important group in terms of training suppliers, accounting for 53% of the total volume of continuing training. In general, in-firm continuing training involves short-term extension courses (one week) and is essentially intended for technical and commercial staff, managers and skilled workers.

Governmental measures to provide assistance to people who are unemployed or in danger of losing their jobs or who have no qualifications led to the development of another type of training. Most of the training courses funded by the government are provided by private schools (10% of participants), the Chambers of Commerce and Industry (6%), professsional associations (5%), adult education centres and unions (3% each). Aside from teaching a job, firms play a marginal role in this type of training. These measures have had a significant impact on the employment policies of former East Germany, in particular to attenuate the structural and social effects of the transition to a market economy.

10. New Challenges for Today's Dual System

10.1. Extending schooling

For the last thirty years, like most European countries, Germany has experienced an expansion in general education, an extension of the length of studies and growing conflicts between the education and employment systems. As a result, there are many controversies and concerns about the future of the dual system. Despite the growth of higher education, the dual system nevertheless continues to represent the dominant mode of socialization into the world of work for German youth (Tessaring 1993). However, the rise in the general-education level and age of youths who take up the vocational training places offered by firms, and the decrease in job offers have increased the competition not only between more educated youths and those who are less educated, but also between the best trained secondary-level youths who graduate from the *Realschule* and those who come from the *Hauptschule* (Marry 1995). Already in 1989, the federal Ministry of

Education (BMBW)[19] noted that college-level graduates who engaged in dual training were concentrated in the most highly valued occupations, namely those in industry, management, bank administration and commerce. The number of trainees in the craft trades (for example, food trades for boys and hairdressing for girls) was decreasing dramatically and these trades were not highly regarded by young people. Nevertheless, they took in two thirds of graduates from the *Hauptschule*. According to Marry (1995), although there may seem to be a degree of "dualism" within the dual system, with a stable and highly valued segment on the one hand and a precarious segment on the other, this opposition is highly simplistic because most students in the dual system now come from the intermediate school or *Realschule*.

10.2. The rigidity of the system

However, nowadays it is increasingly harder for young people to obtain training places, except in some small firms or public bodies. Moreover, because the complexity and rigidity of the dual system make it more difficult to introduce new methods of management, the adjustment of training to the new technologies is slowed down. In the opinion of some analysts, this situation has an effect on the competitiveness of Germany. The concepts of an occupation and its specialized orientation, strongly defended by the unions, make team work difficult because the latter tends to erase the boundaries between individual occupations (Bosch 2000). Other authors consider that the dual system still performs well for the manufacturing industries but less so for the service sector, which essentially includes small- and medium-sized businesses requiring more flexibility.

11. Apprenticeship in the Eastern Länder

11.1. Adaptation of systems

The establishment of the dual system model in East Germany met with several structural problems such as unemployment and a shortage of training places in skilled jobs. This was due in particular to the lack of medium-sized firms to replace the large state industries which had closed down en masse following the reunification of Germany. This situation led the federal government to adopt measures which were considered by some to go against the spirit of the dual system (Giraud, 1995). In the implementation of dual training in former East Germany, the market was made a central regulatory element of vocational training since the West German system is based on the ability of firms to offer training places. However, currently the conditions in the Eastern Länder are not yet sufficient to operate such a system. Former GDR is being completely restructured and without small- and medium-sized firms, the demand for training places cannot be met.

The dual system was also confronted with cultural and organizational challenges. In East Germany, practical training and theoretical or academic training all took place in the firm. Although in theory, teachers and trainers were autonomous, they were tied to the pace of the firm (Giraud, 1995). Although we cannot go into details here, despite having prescribed rules, the East German vocational training system granted firms great flexibility in the definition of skills. Trainees worked directly in the firm's production

activity and often performed heavy tasks that had little training value. As the assessment was conducted locally by the firm's teachers and training foremen, the levels of occupational skills were automatically redefined on the basis of the firm's capacities and needs.

The system was thus miles away from the West German training system, which promotes individual mobility. It is therefore quite understandable that the introduction of the West German model has drastically disrupted East German vocational training practices. East German firms have lost their political functions and are no longer obliged to ensure full employment. On the other hand, under the West German system, they maintain their social function since they are in charge of training youth.

11.2. Impact of restructuring

The transition period has been accompanied by a major restructuring, resulting in the closure of many large firms and the elimination of approximately four million jobs (Giraud 1995: 97). Many trainers had to go on training courses in West Germany to obtain the trainer's certificate of accreditation issued by the Chamber of Commerce and Industry.

Furthermore, firms have had to invest heavily in modern equipment to be able to train young people. Due to the major investments required of firms to upgrade their equipment for training purposes, there has been a massive drop in apprenticeship in industrial firms. As a result, industrial trades such as metalworking and electricity are in serious crisis.

Not only is there a relatively low supply of training places in this industry sector, but there is an even lower demand for training places from young people. Affected by the mass lay-offs in these sectors, they associate this type of qualification, particularly in large firms, with a high risk of unemployment. Young women, who find it more difficult than young men to find a training place, have almost completely withdrawn from the technical or industrial occupations. These occupations had been made more accessible to women through the political priorities of the then DRG (Giraud 1995: 101). To protect themselves from the crisis, many young people now turn to the service sector, the construction industry and, paradoxically, the crafts, a sector that was traditionally looked down upon in the DRG because it was seen as a relic of private enterprise. Countless small businesses that use apprenticeship have been created in these sectors since the advent of the Economic and Monetary Union. These sectors are the only ones to have created jobs, compensating for some of the losses suffered during the restructuring.

To compensate for the shortage of training places, the training system has broadened to include new private training structures, and is practically building a new dual system specifically for the Eastern Länder. The government injected public funds in the training structures, hired staff and subsidized in-firm training places. In 1996, the Federal Insitute of Labour (*Bundesanstalt für Arbeit)* funded approximately 15% of the 280,000 training places in these structures, for a total of DEM900 million[20] ($649 million). In 1998, 80%

of apprenticeship places were funded by the state (Bosch, 2000). The new Länder provide grants to the new firms to encourage them to provide training.

Trainers who had worked under the former training system in East Germany and now work in the new training centres talk in terms of a complete reversal of training conditions. The level imposed by the West German programs, the centralized examination procedures which prohibit any divergence from the national level, the use of new technologies, and the end of primacy of production over training have fundamentally changed the attitude of young people towards their training activities. The rate of absenteeism in some firms, which had risen to approximately 30% before the fall of the Berlin Wall, gradually fell to 2 - 3%.[21]

Nevertheless, the dual system in the Eastern Länder, which was implemented with great difficulty, is only making real progress in sectors where its contribution to the occupational integration of youth is the least effective (Giraud, 1995). In fact, currently the sectors which require the least skilled labour force are the main providers of apprenticeship places. Although the service sector has expanded considerably, it is mainly the small firms of services to private individuals which hire young people, particularly in the hotel industry, hairdressing and commerce, where qualifications are lower than those in industry or business services. These firms devote little time to training their young apprentices, who are just surplus labour for them. Moreover, most of these firms will not hire their trainees at the end of the training contract.

The critical situation of apprenticeship markets led the federal state to finance individual training measures for youth entirely in private training institutions that have no link with firms. This is in itself a measure that is both costly and far removed from the spirit of the dual system. The Eastern social partners, employers' associations and trade unions called for the implementation of a national financing system by industry and based on the distribution of the vocational training effort. Firms would contribute to this fund, which would support the training efforts of the weakest East German firms. Unfortunately, despite the support of IG-Metall, West German firms which view East German firms as competitors, are reluctant to consent to this solidarity effort.

12 . Apprenticeship and Employment: Fighting Youth Unemployment

12.1. Adjusting to the market

Although the dual system is still the dominant mode of apprenticeship for young Germans, the decrease in the number of apprenticeship places since 1990 has worsened the problems of transition from apprenticeship to employment. Thus, whereas 1990 was a record year for the supply of training places with a placement rate of 74%, this proportion dropped to 57% in 1997.[22] This drop can be partly explained by changes in the strategy of firms, changes in the traditional corporate culture of training, and the structural change from a manufacturing economy to a service economy.

While slightly less than 50% of graduates from the dual system obtain an open-ended contract in firms where they underwent their apprenticeship, the others change firms, change occupation or are unemployed. The percentage of unemployed increased from only 13% in 1992 to 21% in 1996. Nevertheless, the unemployment rate of young people aged 25 and under, which was 9.0% in March 1999, is still the lowest in Europe, and is comparable to that of adults.

Can this performance be attributed solely to the organization of the dual system? Heidemann and Böckler-Stiftung point out that trainees who have a contract and work in a firm have better chances of landing a job there than those who do not have a contract. However, the youth unemployment rate in Germany is reduced by the fact that its trainees who have a contract in the firm are counted as workers in the statistics, whereas other European countries' young people in vocational school are not. If the statistical effect were eliminated, the rate of youth unemployment in Germany would be closer to the median rate of European countries.

At the same time, for the last twenty years, the early retirement system has been strongly promoted in order to facilitate young people's access to the labour market. However, early retirement programs are being challenged because of the costs that they create for the social insurance system.

The objective of providing enough training places is a major problem that will go on for many years to come. Judging by the demographic curve, the number of applicants for vocational training in Germany should increase by 1.3% to 2% per year until 2006. The priorities of the German government and those in charge of training are to implement radical reforms in order to ensure a sufficient supply of in-firm training places in the medium term. A BIBB report[23] shows that the number of training contracts concluded increased to 612,711 in 1998, or an increase of 25,254 (4.3%) compared to the previous year. This figure is higher than the number of contracts concluded in each of the years since 1999, which never exceeded the 600,000 figure (see Table 7). Despite this increase, a balance between supply and demand of training places was not achieved.

For 1999, the government predicted that 6000 more students than in 1998 would be added to the unplaced 35,000 applicants of previous years who had to fall back on pre-vocational schools or training programs. According to the principal committee of the Federal Institute for Vocational Training (BIBB), which includes representatives of employers, employees, the Federation and the Länder, the supply of places will not meet the demand in the coming years and the problem of young people's acquisition of vocational qualifications will not be solved in the near future through the dual system alone. This system should be complemented with supporting activities and additional initiatives.

In late 1998, the federal government presented the "Emergency Programme for Combatting Youth Unemployment – youth training, skill acquisition and employment." This program aims to provide assistance to 100,000 youths who still do not have any initial vocational training or who have completed their initial training but who have been

unemployed for more than six months. Specific measures to acquire additional skills and re-enter the workforce, accompanied by a contribution to payroll taxes or to job creation measures, were developed for unemployed young people who have completed vocational training.

The dual system as it is currently structured has reached its limit. First of all, despite the measures taken, the shortage of training places leads young people to complete their training in company-external training bodies rather than in firms. The trade unions have therefore become concerned that once young people have completed their training, they will not find jobs. Second, the system has been unable to stimulate a sufficient supply of places in a constantly evolving economic and employment structure. Finally, the dual system is unable to meet the challenges of adapting training to new technologies. Although initiatives were taken in the 1980s, this is an ongoing challenge that demands continual attention.

12.2. Reforming the system

The social partners and the government are currently working on the principles of "reforming" the apprenticeship system. Debates revolve around four main principles:

> *Modernization of regulation:* the system must be amended and continuously modernized on the basis of new requirements of the economy.
>
> *Inclusion of new occupational fields:* the system is still mainly based on activities in the manufacturing sector. The social partners and government are now attempting to develop training programs in the fields that are expanding in the service sector.
>
> *Mutual recognition of the various parts of the system*: a crucial but currently controversial point is the recognition of the courses provided in the dual system on the one hand and those provided in the school system on the other.
>
> *Differentiation of training*: the level and field of training must be examined in relation to the educational levels of young dropouts and young people who are the weakest academically. The trade unions have until now been against this idea except as it relates, for example, to minimum standards for training courses and fully recognized qualifications. Employers are also against "dumbing down" and consider that training must be at a higher level and more specialized (interviews).

Like any other apprenticeship or training system, over the years, the dual system has had to adapt. The dual apprenticeship system has evolved towards a pluralist system of training which requires other regulatory instruments, including a wide range of measures to harmonize the efforts of training, developing employability and job integration.

13. Examination of the Quebec Apprenticeship System

13.1. Brief overview of the organization of education in Quebec

As in all the other provinces of Canada, Quebec has exclusive jurisdiction over educational matters. The education system comes under the authority of the Ministère de l'Éducation (MEQ, Quebec Department of Education) which is in charge of determining the nature of the educational services to be delivered as well as the general framework for their organization. It ensures that services at the various levels of education are offered in a coherent manner consistent with the educational needs of the population and the social and economic development of Quebec.[24] Quebec has four levels of education: elementary, secondary, college, and university. Children start elementary school at six years old, normally after having attended one year of kindergarten. Elementary education lasts six years and secondary education lasts five years. Students who successfully complete their secondary-school studies and obtain a Secondary School General Diploma can, under certain conditions, undertake postsecondary education or a vocational diploma. This diploma gives them access to the labour market and also allows them, under certain circumstances, to pursue postsecondary studies.

It should be recalled that, as in most countries, school attendance is compulsory for all children until the age of 16. Postsecondary education is divided into college education and university education. College education precedes university education and is subdivided into two types of program, pre-university (two years) and technical (three years). While the latter is geared to access to the labour market, it may also lead, under certain conditions, to university.

Vocational education[25] comes under the authority of secondary educational institutions and is accessible after the third year of secondary school, although students will have more opportunities if they undertake vocational education after the fifth year of secondary school.

13.2. Review of vocational education

A major challenge of the current education reform in Quebec is to improve vocational and technical education. Since the *Estates General on Education* in 1995, the vocational education system has been continuously called into question and is still being reorganized today. The main course of action has involved reasserting the value of the vocational education branches in the eyes of students and fostering a rapprochement between school and the workplace through co-operative education while maintaining the quality of the education. If the Quebec education system is considered from the perspective of the school to work transition, the greatest problems are clearly concentrated in the vocational education sector.

Like in Germany, efforts have also been made to rationalize the number of programs in the Quebec system. In 1985-86, there were more than 500 programs leading to a vocational or technical diploma, whereas by 1995-96, secondary-level institutions offered

only 176 initial training programs to youths and adults. One hundred and twenty four technical training programs were offered at the college level. However, during the same period, 19 new vocational studies programs and 17 technical studies programs were created (Ministère de l'Éducation, 1996: 43-45). Despite this rationalization, there are still doubts about the very high level of specialization of some of these training programs.

In terms of social image, vocational education has always been viewed negatively in Quebec. Many regard it as a "dumping ground" for those who are unable to follow the regular path leading to university. Many parents and students still hold this view. Even though it is generally acknowledged that vocational and technical education is needed, the education department, trade unions, and school system do not always agree on the extent to which schools and firms should be linked.

Enrolment in vocational education had decreased significantly until 1993-94. However, new measures such as the diversification of training paths, co-operative education, and the apprenticeship system brought about a considerable shift. From 1994 to 1997, the total number of students increased by 25%, from 58,023 to 72,683 enrolments.[26] Despite these advances, there are still too few young people undertaking vocational education, particularly in the Montréal area where nearly 80% of vocational training students are adults aged over 20.

While the vocational education sector (secondary level) has trouble recruiting students, the problem faced by the technical education sector (college level) is the low success rate of its students. In 1994-95, only 51.9% of enrolled students obtained the Diploma of College Studies, a drop of six percentage points compared to 1990 -91.

As was seen in the dual system, the Quebec vocational education system was slow in getting involved in the service sectors and is particularly weak in the new technology sector. Thus, a great imbalance between labour requirements and training still exists in some fields.

13.3. The apprenticeship system

Following the 1996 Summit on the Economy and Employment, the promotion of vocational training and improvement of its operation became a high priority and various actions and measures were implemented. These included the establishment of apprenticeship systems in different occupations so as to diversify the training paths offered after successful completion of the third year of secondary school and to increase access to vocational education. This system, which is the closest to the dual system, has very few apprentices and, as will be seen below, could be called into question as a result of the evaluation currently being conducted.

The apprenticeship system was developed by the former Société québécoise de développement de la main-d'œuvre (today called the Commission des partenaires du marché du travail, CPMT, Commission of Labour Market Partners) in cooperation with the educational sector. This system was set up in parallel with the existing vocational

education branches. The trade unions[27] were in favour of a sector-based approach to the definition of training needs which would be updated through the creation of sectoral apprenticeship committees. However, for a long time the MEQ resisted the idea of integrating the sectoral committees into the process of program development. Finally, it was decided that the MEQ would define the programs jointly with sectoral committees made up of partners from the world of work. The latter were present throughout the development process, that is, from the definition of objectives to management of the apprenticeship system. According to the CEQ (1999), " *the apprenticeship system is characterized by the fact that it falls under the responsibility of the world of work (trade associations, joint sectoral committees, etc.), it takes place mainly in the workplace under supervision, and its purpose is to train and qualify as well as supervise access to an occupation or trade.*" [translation]

In recent years, apprenticeship programs have been set up in the following trades: truck driving, driving and setting moulding machines, construction and maintenance industrial mechanics, and milk production, which are all highly traditional sectors. Other trades to be developed in the near future will also be in similar sectors.[28]

As regards the evaluation of apprenticeships, it was decided that the schools would be responsible for evaluating the specific school-based apprenticeships while the firms would be responsible for evaluating the training they provided.

After a year of experimenting with the apprenticeship program, in 1997, the Commission of Labour Market Partners (CPMT) called on external consultants to evaluate the system.

13.4. Evaluation and future of the apprenticeship system

The 1998 report[29] confirmed a number of feelings of discontent expressed during the first year of operation of the apprenticeship system. It indicated that only 24 apprentices had participated in the apprenticeship program, a situation comparable to the experience in Ontario and Alberta where, during the first year of implementation of a similar program there were only 30 and 20 apprentices respectively. For that same year, there were 75,465 students in vocational education in Quebec and the number of students increased from 4000 in 1994-95 to 7000 in 1997-98 in the work-study alternation program. Thus, it seems that the majority of young people prefer to be trained in a public educational institution which, according to Payeur (1999), reflects a major characteristic of Quebec cultural attitudes toward education.

The report also raised other problems: the former SQDM was not in a position to take on new responsibilities for this program; firms found that the system was too costly and imposed too many constraints on them; journeymen stated that they were poorly prepared to evaluate the apprentices; and local unions often blocked apprentices' access to firms. The main findings were as follows: the program's objectives were too numerous and ambiguous; although the program was top-down, it was not actually given a high priority; there was no real partnership or involvement on the part of firms and trade unions; although introduced as a complementary program, it was competing with the other

programs; and the program was costly in terms of human and financial resources. According to Payeur (1999), these findings relate to the structural elements of the apprenticeship system and require interventions that go far beyond mere adjustments.

Nevertheless, the CPMT's evaluation report (1998) concluded that the program should be maintained and recommended major changes. First, it was recommended that priority be given to an educational objective to ensure that the program complements the other training programs while maintaining the quality requirements, thus providing structured training. The CEQ maintained that, to have a structured training progam which is recognized through a Vocational Diploma (Diplôme d'études professionnelles DEP), a system must be developed for occupations that are not covered by vocational education. On the other hand, if the program involves meeting the needs of firms and helping vocational training respond to technological change, then work-study alternation should be promoted rather than setting up a parallel apprenticeship system.

A second recommendation relates to the lack of funding for program implementation. The government clearly sought to have firms and school boards bear the costs of the system without providing an appropriate financial framework. The costs associated with the Apprenticeship System are currently not known and need to be evaluated. It was also recommended in the report that the division of responsibilities within the System be clearly identified and that training courses and targeted clients be specified prior to developing further programs in new occupations. There should be better linkage within the entire vocational education system and pilot projects should be developed in the more promising occupations. Like the report's authors, the CEQ maintains that it is essential that perspectives be clearly specified so that decisions can be made about the objectives related to training for a trade and those related to occupational qualification.

14 A Brief Overview of Apprenticeship in Canada

14.1. Organization of Education in Canada

In Canada, the ten provinces and two territories are responsible for education.[30] Although very similar, the educational structures in each of the provinces were developed in the light of their historical, cultural, social and economic characteristics.

Most of the provinces and territories offer preschool or kindergarten programs to five-year-old children, that is, one year of schooling before starting Grade 1. The length of compulsory school attendance varies from province to province, from the ages of 6 or 7 to 16. For example, in New Brunswick, since 1999, it has been compulsory for young people to stay in school until the age of 18 or until they have obtained their high school diploma.[31] In most of the provinces, primary education covers the first six to eight years of compulsory schooling. Students then start secondary school, where various general education and vocational education programs are offered. The transition point from primary to secondary school may vary from one educational authority to the next.

Once students have successfully completed their secondary studies, they can apply for a place in university or college. As was seen above, Québec students who wish to pursue postsecondary studies must obtain a Diploma of College Studies (in general or vocational education). University studies are divided into three levels, each leading to a either a bachelor, master's or doctoral degree (Ph.D.). Not all universities offer postgraduate programs (master's or doctorate level), but most offer programs leading to diplomas or certificates.

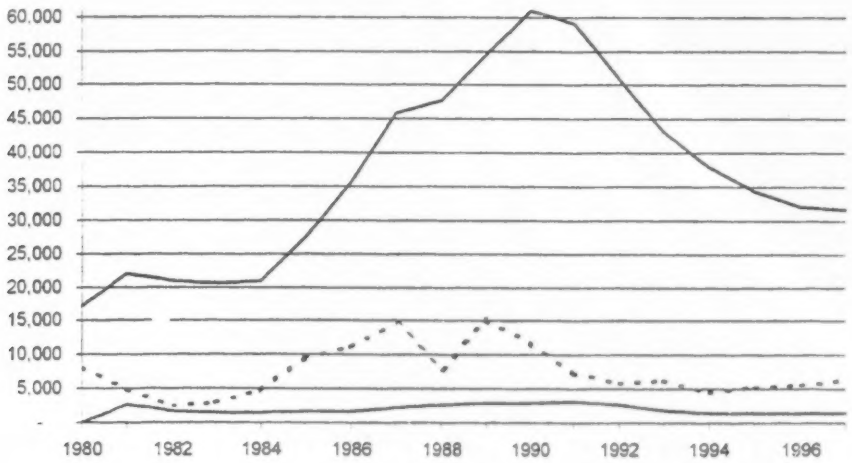
14.2. The apprenticeship system in Canada

According to a recent report, the Canadian apprenticeship system has serious weaknesses.[32] The registration rate in apprenticeship has stagnated since the early 1990s, which stands in sharp contrast to the increase in registration in other post-secondary education programs. The registration rate in apprenticeship programs increased rapidly in the first half of the 1970s, reaching a peak during the 1982 recession. Although the 1983-1985 recession had a negative impact on registration, it went up again in the second half of the 1980s, reaching a new peak in 1991. Once again, the poor economic performance during the first half of the 1990s has had a negative impact.

In Québec, the registration rate rose from 17,163 in 1980 to a peak of 60,899 in 1991, or 2.3% of the labour force aged 15 to 44 (Graph 1). Registration subsequently dropped to 31,640 in 1997, or 1.2% of the population aged 15 to 44.

The three trades with the highest registration for apprenticeship training in 1997, that is, a third of total registrations (34.4%), were: construction electrician (19,771), carpenter (18,688), and automotive services technician (17,368).[33] The building trades accounted for 51.5% of total registrations in 1997. From 1977 to 1997, the fastest growing trades were: landscape worker (12.8% per year), followed by cook (9.1%), industrial machinery mechanic (6.7%), plasterer (5.6%), and hairdresser (5.6%). The declining trades were: sheet metal worker, boilermaker, welder and bricklayer (mason). The apprenticeship system was incapable of expanding beyond the traditional fields of training such as building and motor vehicle repair, to include occupations in business and sales, the health sciences or natural and social sciences. Just like in Germany, the apprenticeship system in the provinces did not develop in the service sectors and is particularly weak in the new technology sector.

Graph 1: Apprenticeship Trends in Québec



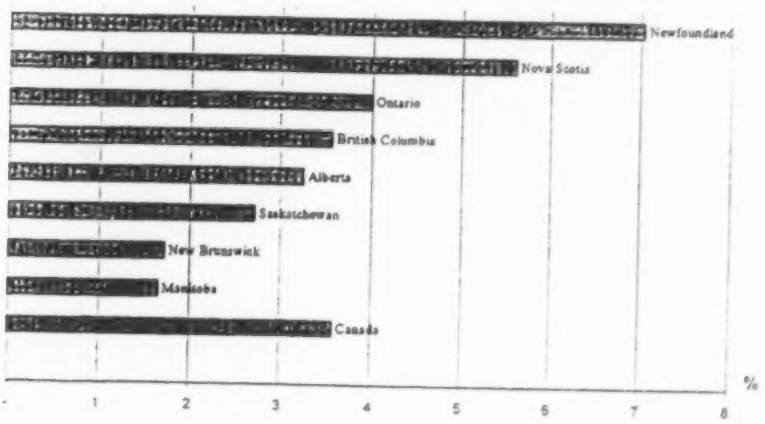
_____Total registrations - - - - - - - new registrations ——completions

Source: Statistics Canada/HRDC.Apprenticeship Database, August 1999. Labour Force survey.

The traditional apprenticeship system has always been highly male-dominated and this is still the case today. In 1995-96, women made up only 3.6% of apprentices in Canada and there has been no change in this proportion in recent years (Sharpe 1999:16). Nevertheless, the relative importance of women in apprenticeship training varies considerably according to province, a reflection of the programs offered.

Hairdressing programs, which are predominantly female, are more numerous in some provinces. The female registration rates for vocational training are 7.4% in Newfoundland (the highest rate) compared to 1.7% in Manitoba (the lowest rate), and 3.6% in Canada (there are no figures for Québec). The Canadian system is distinguished by its inability to significantly increase the relatively low female participation rate in apprenticeship programs (3%).

Graph 2: Female Apprenticeship Registration Rate by Province 1995-1996
(as a percentage)



Source: (Sharpe 1999: 17)

One explanation for the very low rate of apprenticeship completions (9.5%) is the high dropout rate. However, the dropout rate is lower than that in the other types of education and training and is still dropping sharply, by one third over the last two decades. Unlike registration in vocational training and labour force growth which have followed relatively similar curves, the number of apprentices who successfully completed their apprenticeship program has dropped. The number of apprenticeship completions in 1997 (16,383) was lower than that in 1977 (17,429), despite a 40% growth in the labour force and a 40.2% increase in total registration for the same period (p.18). This phenomenon is even more pronounced in Québec as can be seen in the graph 3.

The drop in the success rate can be explained, in particular, by the large number of dropouts and people who leave the programs before completing their training. The dropout rate rose to 39.2% between 1977 and 1997. For each apprentice who completes his or her apprenticeship, there are approximately two and a half who drop out. The success rate also varies according to occupations. Barber and hairdresser occupations (19.9% success rate) were among the 25 occupations that apprentices tend to complete. All the other occupations have a success rate of less than 12%. The lowest success rates are found in the following trades: painter-decorator (8.7%), landscaper (4.8%) and plasterer (1.8%). Nevertheless, the registration rates for the latter two trades increased sharply between 1977 and 1997. The success rate varies from province to province. In 1997, Quebec had the lowest success rate (5.9%) and British Columbia the highest (15%).

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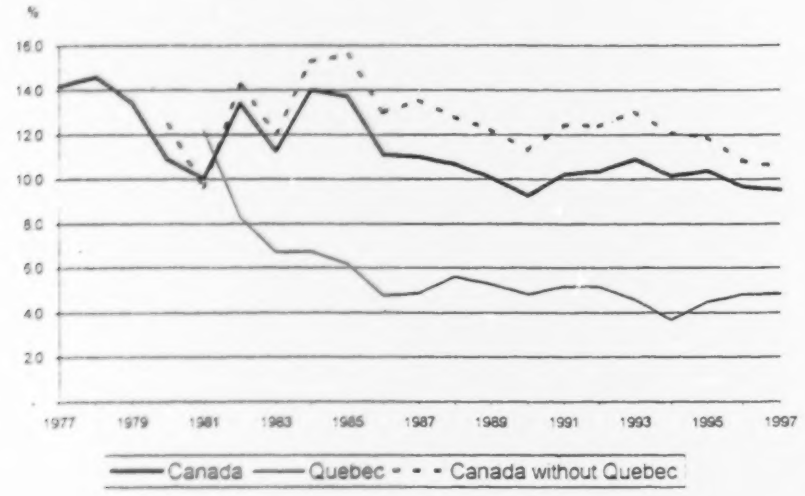
Graph 3: Apprenticeship Success Rate



Source: Sharpe, Andrew (1999: 17)

These trends pose serious challenges for Canada's apprenticeship system in terms of its ability to produce a sufficient supply of skilled workers for the economy.

Since the provinces have jurisdiction over apprenticeship, apprenticeship sytems differ according to province and the importance of the laws and regulations in force. Nevertheless, at least for the time being, apprenticeship is far from being the main method to acquire skills in Canada.

15. Comparison of the German Model to Those in Other Countries

The question of the "transposability" of the German model has been widely studied. Numerous comparative studies have been conducted on the European systems of education, training and labour market regulation, in particular in France, Italy and Great Britain (Marry, Jobert, Tanguy, 1995). Unlike the organization of the German system, the structural split between education and employment in several countries is due to the absence of a direct linkage between the educational and employment systems. Whereas the German market of apprenticeship places operates as a link to the labour market by preselecting the future labour force, the French education system is not strongly linked to the employment system. A comparison of the French and German education and training systems shows that, for example, the dual system, because it is better adjusted to the employment system and uses decentralized mechanisms for self-management of the market of apprenticeship places, results in more effective coordination between training places and short-term needs for relief workers than does the French system (Koch,1998:37).

In several countries, for example in Canada, education and training programs are adapted through state educational planning that is based on expected structural changes. In general, these countries have more extensive complementary measures to support integration, for example public programs of qualification and employment to fight youth unemployment, than does Germany.

The primary factor in the success of the dual system is that it does not compete against itself. In order to innovate and solve the problems of adjusting to the labour market, the education systems in many countries tend to create branches that are parallel to existing ones, thus undermining the value of the latter and creating "upward competition" through higher-level training programs. The second success factor is a proper balance between the process of acquiring vocational qualifications and that of acquiring academic knowledge. Nowadays, many countries have introduced internship and periods of in-firm practical training into their curricula. However, these training periods do not last long and probably cannot rely on a solid tradition of workplace training (Koch, 1998).

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Notes

[1] OECD (1994), *Vocational Training in Germany: Modernisation and Responsiveness*, Paris, p. 13.

[2] Koch Richard (1999), «La rénovation des formations professionnelles: instrument majeur de modernisation du système dual dans les années1970.» in *Les diplômes professionnels en Allemagne et en France*, Möbus, M., Verdier, E. Ed. L'Harmattan. Paris, pp. 29-44.

[3] D'Alba Richard, Handl Johann, Müller Walter (1999), «Les inégalités ethniques dans le système scolaire allemand.» *Formation/Emploi*, No. 65.

[4] Although *Fachhochschulen* belong to the technical school sector, they are a variant of higher education since they require a high school certificate and lead to diplomas that are comparable to those of universities. They are closer to the business world than traditional and technical universities.

[5] See Marry Catherine (1995) and interviews conducted at the BIBB and WZB in February 1999.

[6] Schmidt Hermann, Alex Lasxlo (BIBB) (1997), "The Dual System of Vocational Education and Training in Germany." in *Doing Business with the Germany*. Eds. Roderick Millar and Jonatham Reuvid, London.

[7] Bmb+f (1998) Bundesministerium für Bildung, *Report on Vocational Education*.

[8] Drexel Ingrid (1993), «Le segment intermédiaire des systèmes de formation en France et en RFA, vers un rapprochement?» *Formation/Emploi*, No. 44, pp. 3-22.

[9] Bmbf+f, Numerical barometer,1997/1998: 14.

[10] Möbus Martine,Verdier Eric (1998), «La construction des diplômes professionnels en Allemagne et en France: des dispositifs institutionnels de coordination.» *in Les diplômes professionnels en Allemagne et en France*, L'Harmattan, Paris, pp. 277-291.

[11] Koch Richard (1998), «La rénovation des formations professionnelles réglementées: instrument majeur de modernisation du système dual depuis les années 70.» *in Les diplômes professionnels en Allemagne et en France*; L'Harmattan, Paris, pp. 29-44.

[12] Reiss, Wilfried (1997: 37).

[13] Casey B (1986), "The Dual Apprenticeship System and the Recruitment and Retention of Young Persons in West Germany." *British Journal of Industrial Relations*, Vol. 24, No. 1, pp. 63-82.

[14] Marsden David (1993), «Le génie du système allemand et la réforme du système américain.» *Formation/Emploi*, No. 44, p. 53.

[15] Möbus, M., Verdier, E. (1997), «La construction des diplômes professionnels en Allemagne et en France.» *CEREQ bref*, no 130.

[16] BIBB (1997), *Initial Vocational Training in Germany*, Bonn, p. 12.

[17] BIBB (1997) *Continuing Vocational Training in Germany.*

[18] Alt,C., Sauter,E., Tillmann (1994): *Report under A Article 11(2) of EC Council Decision on the FORCE action programme*, Bielefeld: Bertelsmann Verlag.

[19] Source: *Berufsbildungsberich*, 1991, no. 28, p. 37, Publication of the federal Ministry of Education (BMBW).

[20] BIBB (1997): *Initial Vocational Training in Germany*, p. 14.

[21] Interview with the director of the training centre ofEKO, quoted in Giraud (1994)

[22] Winfried Heidemann, Hans Böckler-Stiftung (1999): *Contribution to the ETUI seminar on combatting youth unemployment.*

[23] Source: *Rapport sur la formation professionnelle.1999.* bmbf/BIBB.

[24] Ministère de l'Éducation du Québec 1996, *Rapport annuel 1995-1996*, p. 9.

[25] In Quebec, vocational education is offered at the secondary level and technical education at the college level.

[26] Ministère de l'Éducation, Indicateur 1999, p 74.

[27] Christian Payeur (1999), *Régime d'apprentissage: état de la situation et réflexions de la Centrale d'enseignement du Québec*, Québec.

[28] Ministère de l'Éducation, *Rapport annuel 1998-1999*, p. 26.

[29]CMTP (1998) *Régime d'apprentissage: perceptions des principaux acteurs, constats diagnostiques retenus et mesures prescriptives recommandées*. Québec.

[30] Council of Ministers of Education Canada. *Indicators of Education in Canada.* September 1998, p. 8.

[31] Council of Ministers of Education Canada. *Report on Education in Canada*,1998, p. 7.

[32] Sharpe, Andrew, *Apprenticeship in Canada: A Training System Under Siege?* Report prepared for the CLFDB National Apprenticeship Committee, December 1999 (draft for discussion).

[33] Source: Statistics Canada, data on apprenticeship.

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